CLAIMS

1. A system for enabling verbal communication on behalf of a local entity with a nearby
user, the system comprising:

- user equipment, intended to be carried by a user, comprising a wireless
  communication subsystem, and contact-data input means for receiving contact data;
- contact-data providing means located at the local entity for making available to a user
  near the local entity or to the user equipment carried by that user, contact data
  identifying a voice service associated with the entity but separately hosted;
- a communications infrastructure comprising at least a wireless network for
  communicating with the wireless communication subsystem of the user equipment;
- audio output means forming part of the user equipment, or located in the locality of
  the local entity and connected to the communication infrastructure;
- audio input means forming part of the user's equipment, or located in the locality of
  said entity and connected to said communications infrastructure; and
- a voice service arrangement for providing said voice service, the voice service
  arrangement being connected to said communications infrastructure such as to enable
  the user's equipment to contact it over the wireless network using said contact data,
  the voice service arrangement being operative, in response to being contacted by the
  user equipment, to act as voice proxy for the local entity by providing voice input and
  output signals over the communications infrastructure to the audio input and output
  means thereby enabling a user to interact with the voice service through spoken
  dialog with voice input by the user through the audio input means and voice output to
  the user through the audio output means.

2. A system according to claim 1, wherein the contact-data means is a beacon device
located at or near the local entity and operative to communicate with the contact-data input
means of the user's equipment over a short-range communication link.

3. A system according to claim 1, wherein the contact-data means comprise markings that
are located on or adjacent the entity and represent the contact data, the contact-data input

means of the user's equipment comprising a scanner for reading the markings.

4. A system according to claim 1, wherein the contact-data means comprises means for presenting the contact data to the user visually or audibly, the contact-data input means of the user's equipment comprising user-operable means through which the user can input the contact data into their equipment.

5. A system according to claim 1, wherein in said dialog the entity is represented in first person terms through the voice service.

6. A system according to claim 1, wherein both the audio input and output means form part of the user equipment, the user equipment being operative to exchange said voice input and voice output with the voice service as voice signals passed across the wireless network.

7. A system according to claim 1, wherein both the audio input and output means are located in the locality of said entity apart from the user equipment, the voice service arrangement being operative to exchange said voice input and voice output with the audio input and output devices as voice signals passed across the communications infrastructure.

8. A system according to claim 1, wherein the audio input means forms part of the user equipment and the latter is arranged to pass said voice input as voice signals across the wireless network to the voice service, the audio output means being located in the locality of said entity apart from the user equipment and the voice service arrangement being arranged to pass said voice output as voice signals to the audio output means across the communications infrastructure.

9. A system according to claim 1, wherein said audio output means comprises multiple sound output devices and means for controlling the sound output such that it appears to be originating from said local entity.

10. A system according to claim 9, wherein said multiple sound output devices are

headphones worn by the user, the location of the voice service sound output in the audio field generated by the headphones being controlled to take account of the relative positions of the user and entity and rotations of the user's head.

11. A system according to claim 9, wherein said multiple sound output devices are loudspeakers associated with the locality of the entity rather than with the user and connected with the voice service through a communications infrastructure., the sound output from the loudspeakers being controlled in dependence on the relative positions of the user and entity.

12. A system according to claim 1, wherein the voice service arrangement comprises:
- a voice page server for serving voice pages in the form of text with embedded voice markup tags; and
- a voice browser comprising:
  - a speech recognizer for carrying out speech recognition of user voice input received as voice signals;
  - a dialog manager for effecting dialog control on the basis of output from the speech recognizer and pages served by the voice page server; and
  - a text-to-speech converter operative to convert voice pages into voice output signals under the control of the dialog manager.

13. A system according to claim 6, wherein the user equipment includes a mobile phone providing the said wireless communication subsystem and said audio input and output means.

14. A system according to claim 6, wherein the voice service arrangement comprises:
- a voice page server for serving voice pages in the form of text with embedded voice markup tags; and
- a voice browser comprising:
  - a speech recognizer for carrying out speech recognition of user voice input received as voice signals;
  - a dialog manager for effecting dialog control on the basis of output from the

speech recognizer and pages served by the voice page server; and

- a text-to-speech converter operative to convert voice pages into voice output signals under the control of the dialog manager;

the user equipment including a mobile phone providing the said wireless communication

5   subsystem and said audio input and output means, the wireless network being a mobile phone wireless network.

15. A system according to claim 14, wherein the voice browser is not part of the user's equipment and the contact data comprises a telephone number usable by the mobile phone

10   to connect over a voice circuit of the wireless network to the voice browser, the voice browser being responsive to being connected to by the mobile phone to access the voice page server and to thereafter use said voice circuit for the exchange of voice input and/or output between the user and voice browser.

15   **16.** A system according to claim 14, wherein the voice browser is not part of the user's equipment and the contact data is in the form of a URL, the mobile phone being operable to pass this URL, via a data-capable bearer service of the wireless network, to the voice service arrangement; the voice service arrangement being operative to thereupon use its voice browser to call back the user on the mobile phone using a voice circuit of the

20   wireless network that is then used for voice input and/or output between the user and voice browser.

17. A system according to claim 14, wherein the voice browser is not part of the user's equipment and the contact data is in the form of a URL, the mobile phone being operable

25   to pass this URL, via a data-capable bearer service of the wireless network, to the voice service arrangement; the voice service arrangement being thereafter operative to use the data-capable bearer service for voice input and/or output between the user and voice browser using a packetized voice protocol.

30   **18.** A system according to claim 14, wherein the voice browser is part of the user's equipment and the contact data is in the form of a URL, the voice browser being operative to use this URL to access, via a data-capable bearer service of the mobile-phone wireless

network, the voice page server; the voice service arrangement being thereafter operative to use the data-capable bearer service for passing text based input and/or output between the voice browser and voice page server.

5   **19.** A system according to claim 1, wherein the wireless network is a proprietary-space local network hosting the voice service arrangement, the local entity being located in the proprietary-space concerned.

20. A system according to claim 6, wherein the wireless network is a proprietary-space

10   local network hosting the voice service arrangement, the local entity being located in the proprietary-space concerned.

21. A system according to claim 20, wherein said audio output means comprises headphones worn by the user, the location of the voice service sound output in the audio

15   field generated by the headphones being controlled to take account of the relative positions of the user and entity and rotations of the user's head such that the sound output appears to be originating from said local entity.

22. A system according to claim 1, wherein the voice service arrangement is operative to

20   connect a user newly contacting the voice service associated with said entity, into a session with any other users currently using the voice service in respect of the same local entity such that all users at least hear the voice output of the voice service.

23. A system according to claim 22, wherein the voice service arrangement is so arranged

25   that voice input from a user is not broadcast to other users joined in the same session unless that input is selected for handling by the voice service.

24. A system according to claim 1, wherein the voice service arrangement is operative to connect a user newly contacting the voice service into a session with any other users

30   currently using the voice service in respect of the same local entity and other entities that have been logically associated with that entity, the voice inputs and outputs to and from the voice service being made available to all such users.

25. A system according to claim 2, wherein the beacon device is operative to include parameter values relating to the state of said local entity in said contact data, the user equipment being operative to pass these parameter values via the wireless network to the
5   voice service arrangement for use in conditioning the output of the voice service.

26. A system according to claim 1, further comprising cooperating means provided at the local entity and in the user equipment for establishing a short range link therebetween, the local entity having associated functionality arranged to be controlled by control data passed
10   to it from the voice service via the short-range link.

27. A system according to claim 26, wherein the local entity has an associated mouth-like feature movable by said functionality in dependence on the control data from the voice service whereby to cause operation of the mouth-like feature in synchronism with voice
15   output from the voice service.

28. A system according to claim 27, wherein the mouth-like feature is electro-mechanical in form with moving mouth parts controlled by electrically-powered actuators.

20   **29.** A system according to claim 27, wherein the mouth-like feature is electronically displayed feature displayed on a display screen.

30. A system according to claim 1, further comprising means for sensing the position of the user relative to the entity, and means for passing corresponding position data to the
25   voice service, the voice service being operative to condition its output in dependence on the user's sensed position.

31. A system according to claim 1, further comprising means for sensing the orientation of the user relative to the entity, and means for passing corresponding orientation data to the
30   voice service, the voice service being operative to condition its output in dependence on the user's sensed orientation.

32. A system according to claim 1, further comprising means for sensing the line of approach of the user relative to the entity, and means for passing corresponding line-of-approach data to the voice service, the voice service being operative to condition its output in dependence on the user's line of approach.

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33. A system according to claim 2, wherein multiple beacon devices are associated with the entity, the contact data of the beacon device first or most recently picked up by the user equipment determining the voice service to be provided to the user in respect of that entity.

10　**34.** A method of voice communication concerning a local entity wherein:

(a) upon a user approaching the local entity, contact data, identifying a voice service associated with the entity but separately hosted, is presented to the user or to equipment carried by the user ;

(b) the contact data is used by the user's equipment to contact the voice service over a

15　wireless network;

(c) the user interacts with the voice service through spoken dialog with both voice input by the user and voice output by the service, the voice service acting as voice proxy for the local entity.

20　**35.** A method according to claim 34, wherein the contact data is presented to the user 's equipment by means of a beacon device located at or near the local entity and communicating with the user's equipment over a short-range communication link.

36. A method according to claim 34, wherein the contact data is presented to the user 's

25　equipment by the scanning into the equipment of markings that are located on or adjacent the entity and represent the contact data.

37. A method according to claim 34, wherein the contact data is visually or audibly presented to the user with the latter then inputting the contact data in their equipment.

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38. A method according to claim 34, wherein both said voice input and voice output are carried across the wireless network between the voice service and sound input and output devices forming part of the user's equipment.

5   **39.** A method according to claim 34, wherein both said voice input and voice output are exchanged with the user by local sound input and output devices that are associated with the locality of the entity rather than with the user and are connected with the voice service through a communications infrastructure.

10   **40.** A method according to claim 34, wherein said voice input is carried across the wireless network to the voice service from a sound input device forming part of the user's equipment, and said voice output is effected through at least one local sound output device that is associated with the locality of the entity rather than with the user and is connected with the voice service through a communications infrastructure.

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41. A method according to claim 34, wherein sound output is through multiple sound output devices controlled so that the sound appears to be originating from said local entity.

42. A method according to claim 41, wherein said multiple sound output devices are
20   headphones worn by the user, the location of the voice service sound output in the audio field generated by the headphones being controlled to take account of the relative positions of the user and entity and rotations of the user's head.

43. A method according to claim 41, wherein said multiple sound output devices are
25   loudspeakers associated with the locality of the entity rather than with the user and connected with the voice service through the communications infrastructure, the sound output from the loudspeakers being controlled in dependence on the relative positions of the user and entity.

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44. A method according to claim 34, wherein the voice service is effected by the serving of voice pages in the form of text with embedded voice markup tags to a voice browser, the voice browser interpreting these pages and carrying out speech recognition of user voice input, text to speech conversion to generate voice output, and dialog management; the voice browser being disposed between a voice page server and the user.

45. A method according to claim 34, wherein the user equipment includes a mobile phone, step (b) involving contacting the voice service using the mobile phone and step (c) involving the mobile phone to transfer voice service input and output to and from the user.

46. A method according to claim 34, wherein:
-   the voice service is effected by the serving of voice pages in the form of text with embedded voice markup tags to a voice browser, the voice browser interpreting these pages and carrying out speech recognition of user voice input, text to speech conversion to generate voice output, and dialog management; the voice browser being disposed between a voice page server and the user; and
-   the user equipment includes a mobile phone, step (b) involving contacting the voice service using the mobile phone and step (c) involving the mobile phone to transfer voice service input and output to and from the user.

47. A method according to claim 46, wherein the voice browser is not part of the user's equipment and the contact data comprises a telephone number which when dialled by the mobile phone connects over a voice circuit to the voice browser and causes the latter to access the voice page server, the voice circuit being subsequently used for the exchange of voice input and/or output between the user and voice browser.

48. A method according to claim 46, wherein the voice browser is not part of the user's equipment and the contact data is in the form of a URL which in step (b) the mobile phone passes, via a data-capable bearer service of the mobile-phone wireless network, to the voice service; the voice service then using the voice browser to call back the user on the mobile phone using a voice circuit that is then used in step (c) for voice input and/or output between the user and voice browser.

49. A method according to claim 46, wherein the voice browser is not part of the user's equipment and the contact data is in the form of a URL which in step (b) the mobile phone passes, via a data-capable bearer service of the mobile-phone wireless network, to the

5   voice service; the data-capable bearer service being subsequently used in step (c) for voice input and/or output between the user and voice browser using a packetized voice protocol.

50. A method according to claim 46, wherein the voice browser is part of the user's equipment and the contact data is in the form of a URL which in step (b) the voice browser

10   uses to access, via a data-capable bearer service of the mobile-phone wireless network, the voice page server; the data-capable bearer service being subsequently used in step (c) for passing text based input and/or output between the voice browser and voice page server.

51. A method according to claim 34, wherein the wireless network is a proprietary-space

15   local network hosting the voice service, the local entity being located in the proprietary-space concerned.

52. A method according to claim 51, wherein the user equipment includes a wireless headset which in step (c) is used for exchanging voice input and output with the voice

20   service over the same wireless network as used in step (b).

53. A method according to claim 34, wherein the carrying out of step (b) is subject to user approval at the time.

25   **54.** A method according to claim 34, wherein the user equipment ensures that the user is only connected to one voice service at a time regardless of how many local entities with beacon devices are within pickup range.

55. A method according to claim 34, wherein in step (b) the identity of the user is sent to

30   the voice service and used by the latter to look up user profile data which is then used to customise the voice service to the user.

56. A method according to claim 34, wherein the user on contacting the voice service in step (b) is joined into a session with any other users currently using the voice service in respect of the same local entity such that all users at least hear the voice output of the voice

5   service.

57. A method according to claim 56, wherein voice input from a user is not broadcast to other users joined in the same session unless that input is selected for handling by the voice service.

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58. A method according to claim 34, wherein the user on contacting the voice service in step (b) is joined into a session with any other users currently using the voice service in respect of the same local entity and other entities that have been logically associated with that entity, the voice inputs and outputs to and from the voice service being made available

15   to all such users.

59. A method according to claim 35, wherein the beacon device includes parameter values relating to the state of said local entity in said contact data, these parameter values being passed in step (b) over the wireless network to the voice service where they are used

20   in conditioning the output of the voice service.

60. A method according to claim 34, wherein the local entity has associated functionality that is controlled by control data passed from the voice service via the short-range link between the user equipment and beacon device.

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61. A method according to claim 60, wherein the local entity has an associated mouth-like feature movable by said functionality, the control data from the voice service being used to cause operation of the mouth-like feature in synchronism with voice output from the voice service.

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62. A method according to claim 61, wherein the mouth-like feature is incorporated into the beacon device.

63. A method according to claim 61, wherein the mouth-like feature is electro-mechanical in form with moving mouth parts controlled by electrically-powered actuators.

5 **64.** A method according to claim 61, wherein the mouth-like feature is electronically displayed feature.

65. A method according to claim 34, wherein the voice service provided to a user is dependent on the user's position relative to the entity.

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66. A method according to claim 34, wherein the voice service provided to a user is dependent on the user's orientation relative to the entity.

67. A method according to claim 34, wherein the voice service provided to a user is
15 dependent on the user's line of approach relative to the entity.

68. A method according to claim 35, wherein multiple receiving devices are associated with the entity, the contact data of the receiving device first or most-recently picking up the user-related contact data determining the voice service being provided to the user in respect
20 of that entity.